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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HARVEY, DIONNE

ART UNIT PAPER NUMBER

2646

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/031,337

Applicant(s)

NIELSEN ET AL.

Examiner

Dionne N. Harvey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Goodings (U.S. 5,259,033)** in view of **Soli (U.S. 5,402,496)**.

Regarding claims 1 and 6, Goodings teaches the apparatus of claim 6, as well as a method for canceling feedback in an acoustic system comprising: a microphone (5); a signal path (shown); a speaker (11); means for detecting presence of feedback (31) between the speaker and microphone; an amplifier (7,9); memory means (inherently taught in Goodings' disclosure of elements 31 and 27); and filter means (27) for compensating at least partly a possible feedback signal;

The method comprising : providing a LMS algorithm for generating filter coefficients (see discussion of correlator 31 in column 9, lines 12-24); In column 10, lines 20-53, Goodings teaches a residual signal dependent i.e., feedback level dependent adaptation speed comprising two modes; the two modes including a high rate adaptation and lower imposed rate of adaptation where the adaptation coefficients may be changed "...stepwise between two values, a high value and a low value...", the operation of the adaptation coefficients at "low value", reading on "a first mode"; and the operation of the adaptation coefficients at "high value", reading on "a second mode";

In what the Examiner has interpreted as the first mode, being indicative of a stable system, where the sensed level of residual feedback present is negligible, the correlator operates according to coefficients having a low value and thusly slower adaptation speed;

In what the Examiner has interpreted as the second mode, such as in cases where the device is operating from cold, or when the sensed level of residual feedback is high, the correlator operates according to coefficients having a high value thereby having a faster adaptation speed;

And where the means for detecting the presence of feedback (see correlator **31** or discriminator discussed in **column 10, lines 41-43**) is used to control the adaptation mode selection i.e., the speed of adaptation.

Goodings does not clearly teach that the feedback detection means comprises "bandwidth detection means" for determining the presence of a feed back signal. Soli teaches, "Although...feedback energy are concentrated in specific spectral regions, adaptive noise filters generally operate over the entire bandwidth of the hearing aid." But, in **column 2, lines 33-35**, teaches that there is a need in the art for providing an adaptive filtering system, which is focused over a selected frequency band.

Accordingly, in **column 4, lines 10-18**, Soli teaches a time-domain method for focusing feedback suppression over the bandwidth of undesired noise energy. In **lines 17-18 of column 4**, Soli clearly teaches emphasis in signal shaping over the *frequency band* of interest, and in **column 7, lines 56-60**, Soli teaches that the adaptive

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cancellation is focused over a "desired spectral range", thereby reading on, "bandwidth detection means" as claimed.

It therefore, would have been obvious for one of ordinary skill in the art at the time of the invention to alter the invention of Goodings per the teaching of Soli, for the purpose of "resulting in [more] efficient utilization of the resources of [the] adaptive filter".

Regarding claims 2 and 6, Goodings teaches determining the update rate of said LMS algorithm by the long-term average denominator, as is well known in the art.

Regarding claim 3, Goodings teaches a high-pass filter (87) to prevent low-frequency signals from entering the LMS algorithm, where an additional feedback cancellation filter (79) and a noise generator (33) is used for providing low-frequency input for the LMS algorithm.

Regarding claim 4, Goodings teaches that the stability of the signal determined as a feedback signal is *analyzed*, as broadly claimed.

Regarding claim 5, As is well understood in the art, the correlator (31) and adaptive filter (27) will adjust weighting coefficients according to the LMS algorithm by comparison of successive time frames and their associated flag values.

Regarding claim 7, in **column 10, lines 41-43 and 55-60**, Goodings teaches that in a stable system, no adaptation is required. The Examiner has interpreted the discriminator which acts in response to a sensed level of residual signal, as reading on "stability detecting means" for the feedback signal.

Response to Arguments

Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

Applicants arguments with respect to Goodings U.S. 5,259,033, have been considered and a detailed new grounds of rejection has been provided, above.

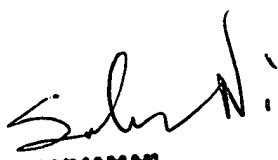
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dionne N Harvey whose telephone number is 703-305-1111. The examiner can normally be reached on 9-6:30 M-F and alternating Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 703-305-4708. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dionne Harvey


SUHANI
PRIMARY EXAMINER